

(original)

	<b>Photosynthesis</b>	<b>Respiration</b>
<b>Formula</b>	$\text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{light}} \text{CH}_2\text{O} + \text{O}_2$	$\text{CH}_2\text{O} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{ATP}$
<b>Purpose</b>	Make carbohydrate	Make energy (ATP)
<b>Organelle</b>	Chloroplast	Mitochondria
<b>Membrane</b>	Thylakoid	Cristae
<b>Energy Molecule</b>	NADPH, ATP	NADH, ATP, FADH <sub>2</sub>
<b>Reaction Steps</b>	Light - energy producing Dark - CH <sub>2</sub> O producing "Calvin"	Anaerobic - CH <sub>2</sub> O processing Aerobic - ATP producing "Krebs"
<b>Unique Features</b>	Chlorophyll a, b Carotenoids Stomata Guard Cells C - 3 (C - 4. CAM)	Osmosis of CH <sub>2</sub> O (skeleton for carbo's) Glucose is C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> O <sub>2</sub> dependent reactions O <sub>2</sub> debt + fermentation (alcohol and lactic acid)
<b>Similar Features</b>	<ol style="list-style-type: none"><li>1. H<sup>+</sup> pump establishes gradient to drive ATP production using ATP synthase.</li><li>2. e<sup>-</sup> transport chain producing the other energy molecules (NADH, NAD, FADH<sub>2</sub>).</li></ol>	